OCR
Oxford Cambridge and RSA

Sample Assessment Material Version 2.0

Level 3 Certificate in Core Maths B (MEI)

H869/01 Introduction to Quantitative Reasoning
Sample Question Paper

Time allowed: 2 hours

You must have:
- the Insert (inside this document)

You can use:
- a scientific or graphical calculator

Please write clearly in black ink. **Do not write in the barcodes.**

Centre number | | | | | | Candidate number | | | | |

First name (s) _____

Last name _____

INSTRUCTIONS
- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working.
- Give your final answers to a degree of accuracy that is appropriate to the context.

INFORMATION
- The total mark for this paper is **72**.
- The marks for each question are shown in brackets **[ ]**.
- This document has **24** pages.

ADVICE
- Read each question carefully before you start your answer.

1 The table shows exchange rates displayed at a bank in England.

Currency	We sell at	We buy at
Australian dollar	1.48	1.64
Canadian dollar	1.54	1.76
Euro	1.14	1.31
Turkish lira	2.55	3.08
US dollar	1.52	1.73

(a) How much will 200 Euros cost a customer in English pounds?

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..... **[3]**

(b) A watch is priced at $58.50 US dollars.

Calculate an estimate of the cost of the watch in English pounds.

Use the exchange rates in the table.

Show your calculations **and** any approximations you make.

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..... **[3]**

2 The Earth travels round the Sun once a year.

The average distance of the Earth from the Sun is 1.5×10^{11} m.

Assume that the Sun remains still and ignore the rotation of the Earth about its axis.

(a) What assumption must be made about the path of the Earth to estimate its average speed from the information given?

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..... **[1]**

(b) Calculate an estimate of the Earth's average speed.

Give your answer in **km h^{-1}**.

Give your answer to an appropriate degree of accuracy.

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..... **[5]**

3 This question is based on the article in the **pre-release material**, **'**Caring for the elderly'. A clean copy of the pre-release material is provided as an Insert.

A home care worker takes a new job through an agency.
They travel to elderly people's homes to provide care for them.
They are with each client for either 15 minutes or half an hour.

Here is a summary of their first day at work:

Morning (am):
- 7am - set off to see first client
- journey to first client takes half an hour
- with first client for 15 minutes
- journey to second client takes half an hour
- with second client for 15 minutes
- arrive home at 12 noon having seen a total of six clients, two for 15 minutes each and four for half an hour each.

Afternoon (pm):
- 5pm - set off for evening visits
- journey to first client takes 20 minutes
- arrive home at 7pm, having seen a total of four clients for 15 minutes each.

(a) The agency pays the care worker £7.30 an hour for the time they are with clients. The agency does **not** pay the care worker for any time travelling.

How much does the agency pay the care worker for their first day?

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..... **[2]**

(b) Another agency pays home care workers for time with clients **and** time travelling between clients.
They do **not** pay for time travelling to or from home.

This agency pays £6.31 an hour.

(i) Which of these is the most appropriate estimate of the care worker's total time travelling to and from home on their first day at work?

Tick (✓) **one** box.

30 minutes ☐

50 minutes ☐

1 hour 40 minutes ☐

3 ½ hours ☐

[1]

(ii) Work out how much the second agency would pay the care worker for their first day at work.

Use your answer from **(b)(i)**.

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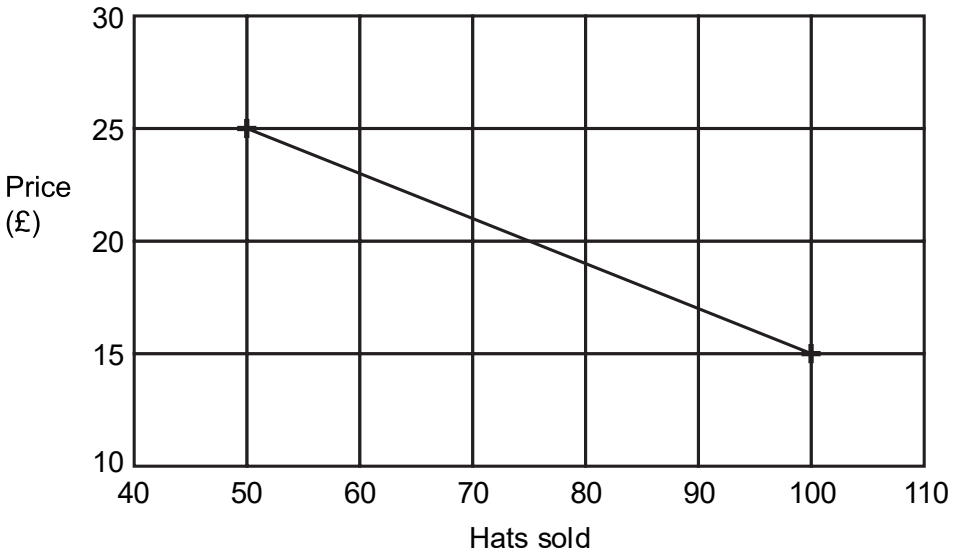
..... **[3]**

4 Heidi sets up a business making hats.
She needs to decide how much to sell the hats for.
Each hat costs her £3 to make.
She can make up to 100 hats per week.

Heidi has done market research which suggests:

- she can sell 100 hats per week if she charges £15 for each hat
- she can only sell 50 hats per week if she charges £25 for each hat.

The graph shows the demand curve modelled as a straight line.



She uses this model and a spreadsheet to find the price for the hats that will give her the maximum profit.

The table opposite shows the spreadsheet she uses.

(a) Complete **column B** of the table by filling in the missing numbers.

	A	B	C	D
1	**Price (£)**	**Hats sold**	**Cost (£)**	**Profit (£)**
2	15	100	300	1200
3	16			
4	17		270	1260
5	18			
6	19			
7	20		225	1275
8	21			
9	22			
10	23		180	
11	24		165	
12	25	50	150	

[2]

(b) What formula should be in cell C2 so that it can be copied down the column to give the cost in each row?

.....**[2]**

(c) What formula should be in cell D2 so that it can be copied down the column to give the profit in each row?

.....**[2]**

(d) What price should Heidi sell the hats for to make the maximum profit?

The price of the hats needs to be a whole number of pounds.

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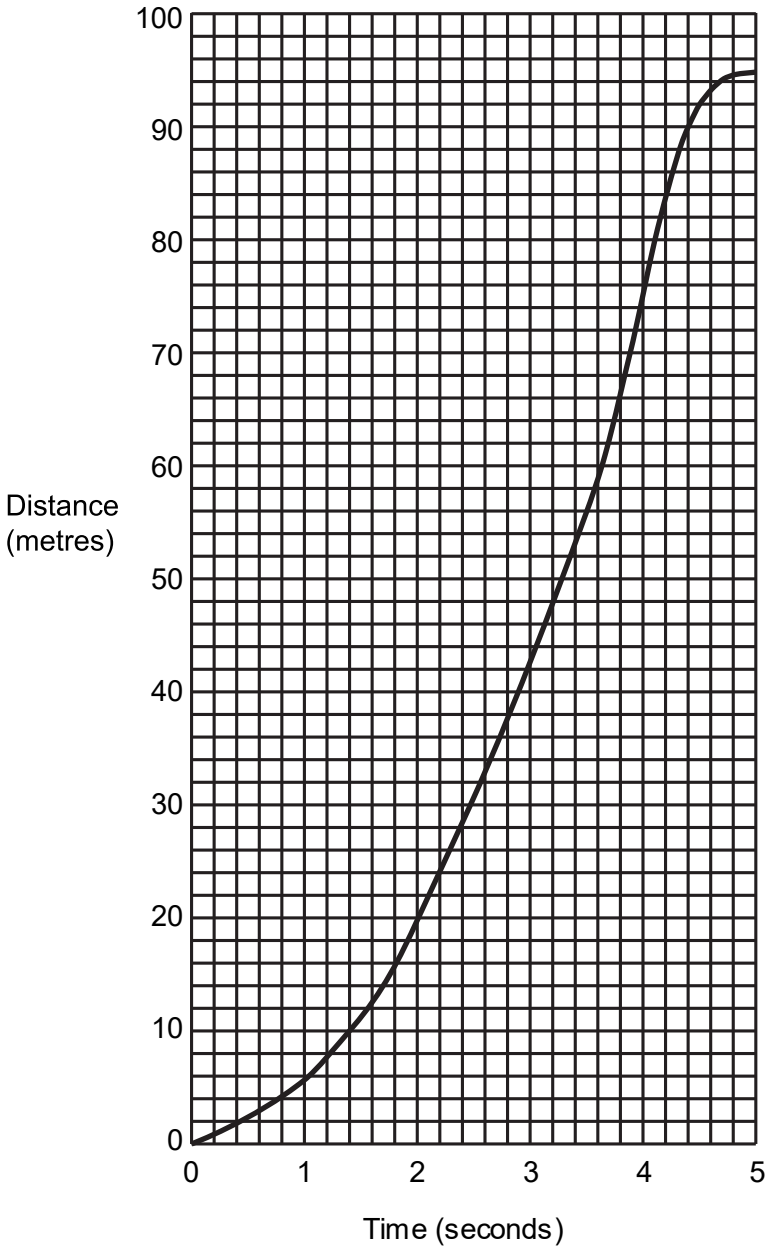
.....**[4]**

5 A cheetah is the fastest land animal.

(a) The graph shows the motion of a cheetah over five seconds.



(i) At what time is the cheetah travelling the fastest?

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..... **[1]**

(ii) Calculate an estimate of the cheetah's maximum speed over these 5 seconds.

Use the graph.

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..... **[3]**

(b) Two websites give the maximum speed of a cheetah.

- One website says that the maximum speed of a cheetah is 50 metres per second.
- The other website says that the maximum speed of a cheetah is 70 miles per hour.

Determine whether these two speeds are approximately the same.

Show your reasoning.

Use 5 miles $\approx$ 8 km.

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..... **[4]**

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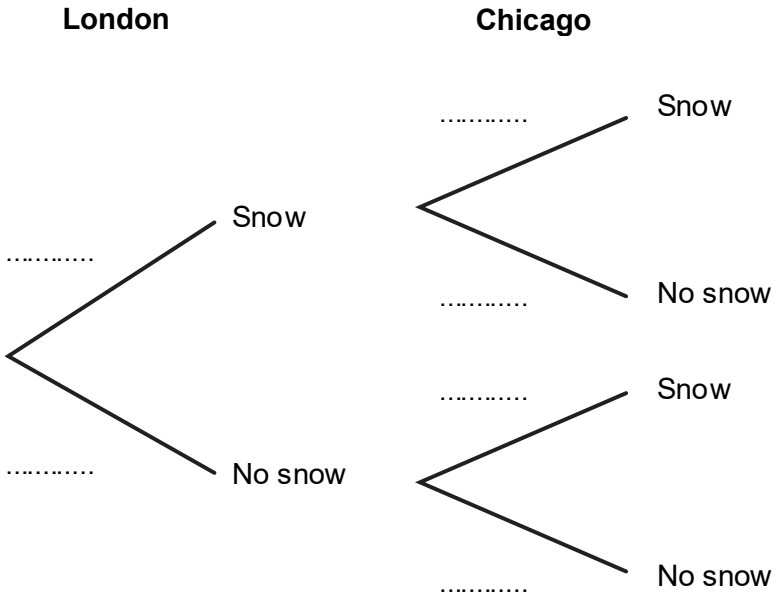
6 **(a)** A plane flies from London to Chicago.
The weather forecast for the day of the flight shows that:

- the probability of snow in London is 60%
- the probability of snow in Chicago is 80%.

Assume the weather in London and Chicago are independent of each other.

(i) Complete the tree diagram.



[3]

(ii) Calculate the probability that there will be snow in at least one of these two places on the day of the flight.

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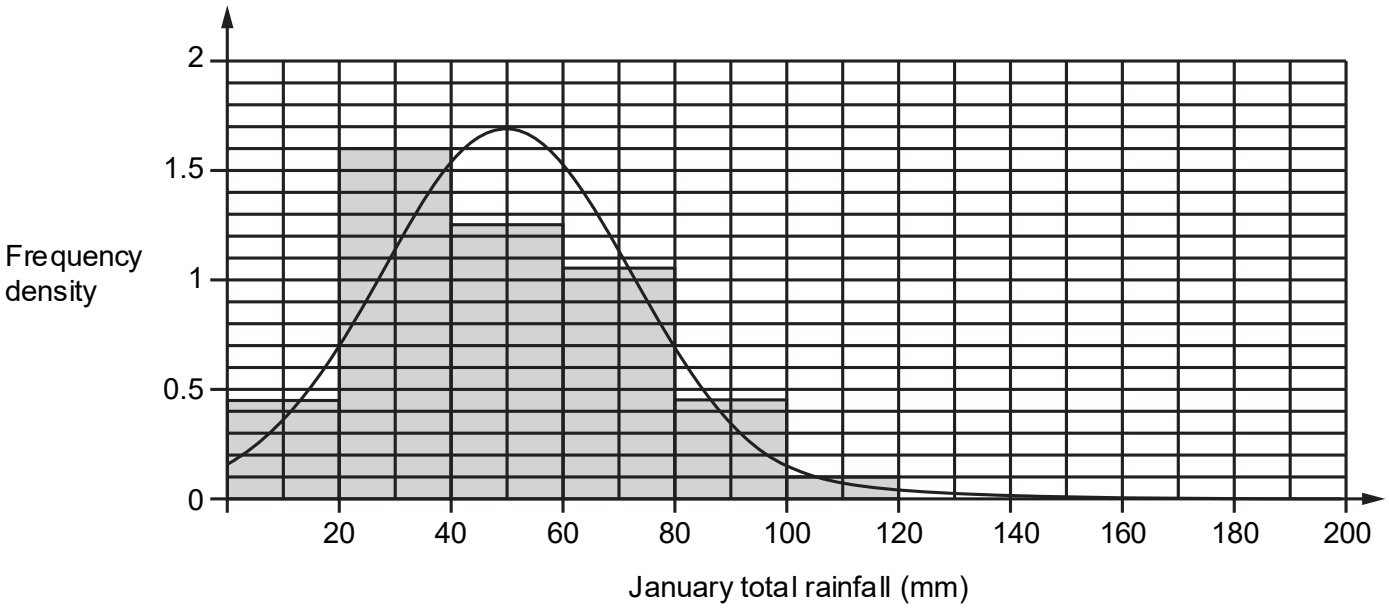
..... **[2]**

(b) The histogram shows the distribution of January rainfall near an English town for 98 years.

A Normal distribution has the same mean and standard deviation as the rainfall data.
The diagram shows part of this Normal curve.



(i) Use the Normal curve to work out an estimate of the mean of the rainfall data.

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..... **[1]**

(ii) Use the Normal curve to calculate an estimate of the standard deviation of the rainfall data.

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..... **[2]**

(iii) Give **two** reasons to reject the Normal distribution as a model for the rainfall data.

Reason 1 .....

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Reason 2 .....

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..... **[2]**

7 **(a)** The population of the world in 1960 was 3040 million.

The population of the world in 1975 was 4090 million.

Models A and B are two different models for the population growth.

(i) In model A the population grows by a constant **number** of people each year.

Show that the average increase from 1960 to 1975 is 70 million people per year.

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..... **[2]**

(ii) In model B the population grows by a constant **percentage** each year.

What constant annual percentage growth rate from 1960 to 1975 would result in the population increasing from 3040 million to 4090 million?

Show your working.

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..... **[3]**

(iii) The population of the world in 2000 was 6090 million.

Determine which of the two models is better.

Show your reasoning.

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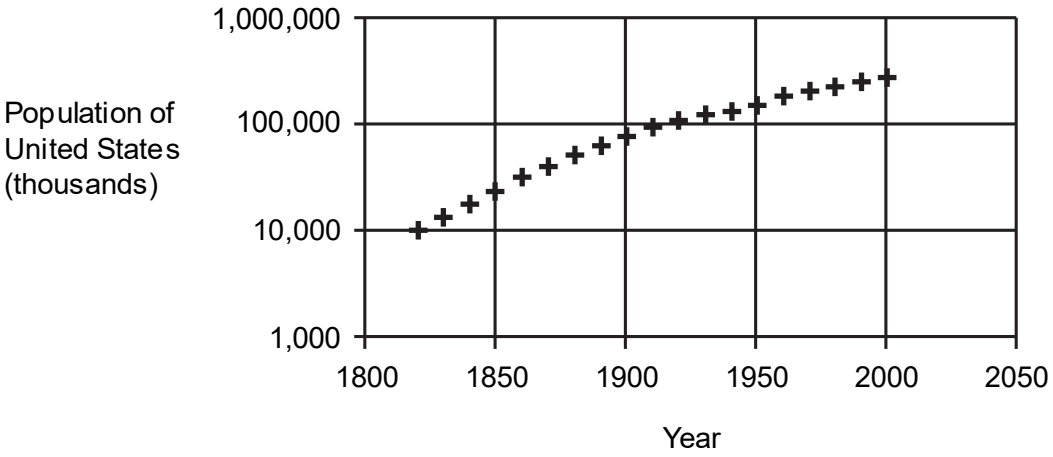
(b) The chart shows the population of the United States, in thousands, from 1820 to 2000.



The vertical axis has a logarithmic scale.

What was the approximate population of the United States in 1860?

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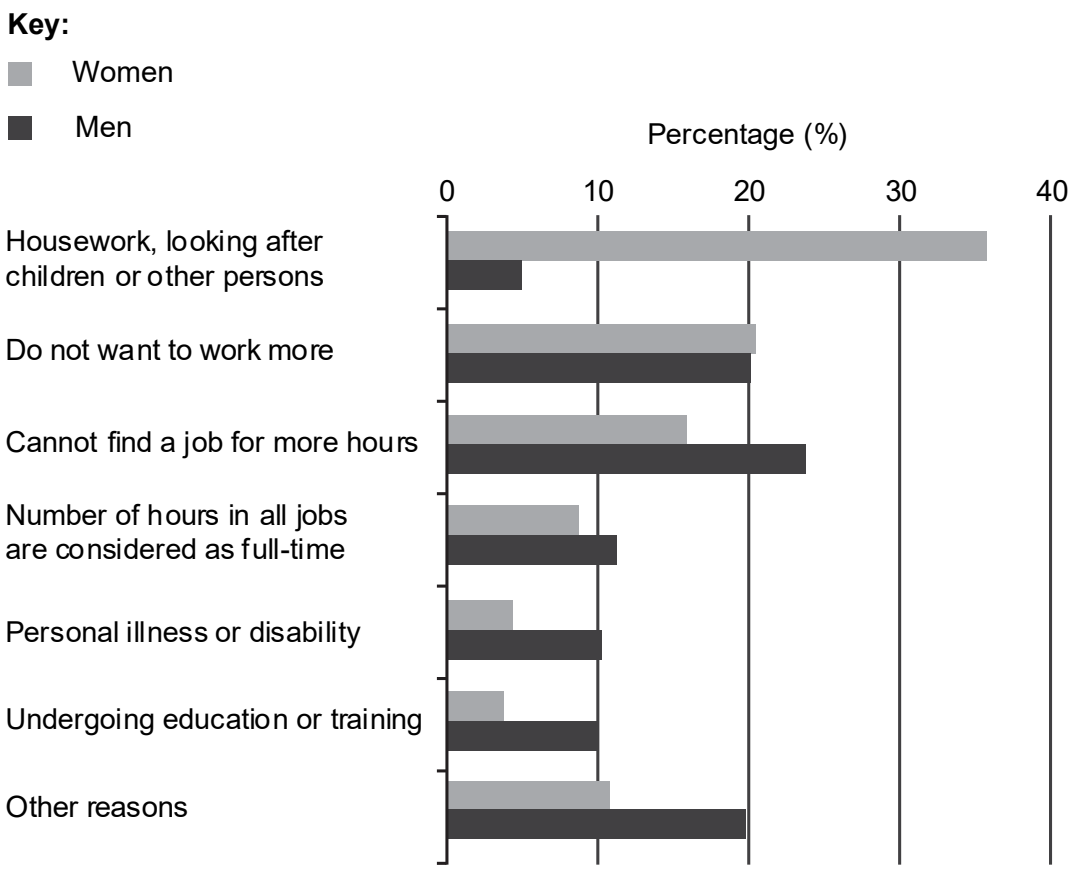
8 Men and women in the European Union who work less than 30 hours per week were asked why they work less than 30 hours per week.

The chart shows the results of this survey in percentages.



(a) Suggest **one** way that the graph could be improved to show the information more clearly.

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..... **[1]**

(b) Each woman responding to this survey gave only one reason.

Show that the men responding to this survey also choose only one reason each.

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(c) There are four times as many women as men working less than 30 hours per week in the European Union.

(i) Show that approximately 5% of people surveyed (men and women combined) gave the reason 'undergoing education or training'.

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(ii) Find the corresponding percentage that gave the reason ‘housework, looking after children or other persons’.

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9 A typical ant is about 5 mm long and weighs about 3 mg.

An actor has a height of about 2 m and weighs about 80 kg.

(a) How many times smaller is the length of the ant in comparison to the height of the actor?

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..... **[1]**

(b) A science fiction film script includes shrinking the actor to 5 mm tall.

As the actor shrinks, their weight is directly proportional to their volume.

Compare the weight of the 5 mm tall actor to the weight of the ant.

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END OF QUESTION PAPER

EXTRA ANSWER SPACE

If you need extra space use these lined pages. You must write the question numbers clearly in the margin.

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Copyright Information

6 (b) 19/5/14: Graph has been adapted from data at: http://www.iceni.org.uk/index/rain/data1926.htm

8 © European Union, 2010. 'Combating poverty and social exclusion: A statistical portrait of the European Union 2010' Figure 2.9, p29.

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Sample Assessment Material

Level 3 Certificate in Core Maths B (MEI)

H869/01 Introduction to Quantitative Reasoning

MARK SCHEME

Duration: 2 hours

MAXIMUM MARK 72

Version – 2.0
Last Updated: September 2025

This document consists of 16 pages

Marking Instructions

Preparation For Marking

1. RM Assessor

- Access and complete the on-screen marking training packages: OCR Examiner Training (RMA3).
- Read the mark scheme and question paper for this component or unit.
- The mark scheme and question paper are available in RM Assessor or on your Component Page if you use the Training Platform for standardisation.
- Log in to RM Assessor and mark the **required number** of practice scripts and the **required number** of standardisation scripts.

Marking

2. General Guidance

- Mark strictly to the mark scheme.
- Marks awarded must relate directly to the marking criteria.
- If you are in any doubt about applying the mark scheme, consult your Team Leader by phone, email or via the RM Assessor messaging system.
- It is **essential** that you meet the RM Assessor 50% and 100% batch deadlines. For traditional marking this will be 40% and 100%. If you experience problems, contact your Team Leader without delay.
- Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there, then add the annotation '**SEEN**' to confirm that the work has been seen and mark any responses using the annotations in Section 11.
- The RM Assessor **comments box** is used by your Team Leader to explain the marking of the practice responses. Use these comments when checking your practice responses. **Do not use the comments box for any other reason.**

- **Before the end of the marking period** send *a brief report on the performance of candidates to your Team Leader via email. The report should contain notes on strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.*

3. No Response and Crossed-out Answers

Using the No Response (NR) option. Only mark as NR if:

- the answer space is blank
- there is only a comment not related to the question (e.g., 'can't do', 'don't know')
- there is only a mark (e.g., a dash, a question mark) which is not an attempt at the question.

Note: Enter 0 marks for an attempt that earns no credit (including copying out the question). Do **not** use NR.

Crossed-out answers
If a candidate has crossed out an answer and written a clear alternative, do **not** mark the crossed-out answer.

If a candidate has crossed out an answer and **not** written a clear alternative, mark the crossed-out answer if it is readable.

4. Responses with more answers than needed

- **Multiple-choice question answers**
  When a multiple-choice question has only **one** correct answer and a candidate has written two or more answers (even if one of these answers is correct), do **not** award a mark.

  When a multiple-choice question asks candidates to select **more than** one option the marking guidance from your Principal Examiner will ensure consistency of approach.

Contradictory answers in points-based questions
Do **not** award any marks, even if one of the answers is correct.

- **Rubric error answers – optional questions**
  Where candidates have a choice of question/s and they provide more answers than required, all responses are marked and entered into RM Assessor. The highest mark allowable within the rubric will automatically be selected.

- **Questions that ask for a set number (including 1) of short answers or points**
  Mark only the **first set number** of answers/points. (e.g. **two** reasons for something)

  First mark the answers/points against printed numbers on the answer lines. Mark the first answer/point against each printed number. **Second**, if candidates have not followed the printed numbers, mark the answers/points from left to right on each line. **Third,** mark line by line until the set number of answers/points have been marked. Do **not** mark any remaining answers/points.

  Examiners should use their own judgement to decide if a 'second answer' on the same line is adding more detail to the first answer, or if it is a completely separate answer.

- Short Answer Questions **(requiring a more developed response, worth two or more marks**)
  If the candidates are required to provide a description of, for example, three items and four items are provided, mark line by line until the set number of descriptions have been marked (it is unlikely a candidate will provide more than one response on each line in this scenario).

- Longer Answer Questions **(requiring a developed response)**
  If a candidate has written two or more answers to a question that only requires one (developed) answer, only mark the first answer (which has not been crossed out).

5. Annotations available in RM Assessor

Annotation	Meaning
✓and ✗	
BOD	Benefit of doubt
FT	Follow through
ISW	Ignore subsequent working
M0, M1	Method mark awarded 0, 1
A0, A1	Accuracy mark awarded 0, 1
B0, B1	Independent mark awarded 0, 1
SC	Special case
^	Omission sign
MR	Misread
Highlighting	

6. Abbreviations, annotations and conventions used in the mark scheme (including subject-specific conventions).

Abbreviation / Annotation	Meaning
E1	Mark for explaining
U1	Mark for correct units
G1	Mark for a correct feature on a graph
M1 dep*	Method mark dependent on a previous mark, indicated by *
cao	Correct answer only
oe	Or equivalent
rot	Rounded or truncated
soi	Seen or implied
www	Without wrong working

7. Subject Specific Marking Instructions

a. Annotations must be used during your marking. For a response awarded zero (or full) marks a single appropriate annotation (cross, tick, M0 or ^) is sufficient, but not required.

For responses that are not awarded either 0 or full marks, you must make it clear how you have arrived at the mark you have awarded and all responses must have enough annotation for a reviewer to decide if the mark awarded is correct without having to mark it independently.

It is vital that you annotate standardisation scripts fully to show how the marks have been awarded.

Award NR (No Response)
- if there is nothing written at all in the answer space and no attempt elsewhere in the script
- OR if there is a comment which does not in any way relate to the question (e.g. 'can't do', 'don't know')
- OR if there is a mark (e.g. a dash, a question mark, a picture) which isn't an attempt at the question.

Note: Award 0 marks only for an attempt that earns no credit (including copying out the question).

If a candidate uses the answer space for one question to answer another, for example using the space for 8(b) to answer 8(a), then give benefit of doubt unless it is ambiguous for which part it is intended.

b. An element of professional judgement is required in the marking of any written paper. Remember that the mark scheme is designed to assist in marking incorrect solutions. Correct solutions leading to correct answers are awarded full marks but work must not always be judged on the answer alone, and answers that are given in the question, especially, must be validly obtained; key steps in the working must always be looked at and anything unfamiliar must be investigated thoroughly. Correct but unfamiliar or unexpected methods are often signalled by a correct result following an apparently incorrect method. Such work must be carefully assessed. When a candidate adopts a method which does not correspond to the mark scheme, escalate the question to your Team Leader who will decide on a course of action with the Principal Examiner.

If you are in any doubt whatsoever you should contact your Team Leader.

c. The following types of marks are available.

M

A suitable method has been selected and applied in a manner which shows that the method is essentially understood. Method marks

are not usually lost for numerical errors, algebraic slips or errors in units. However, it is not usually sufficient for a candidate just to indicate an intention of using some method or just to quote a formula; the formula or idea must be applied to the specific problem in hand, e.g. by substituting the relevant quantities into the formula. In some cases the nature of the errors allowed for the award of an M mark may be specified.
A method mark may usually be implied by a correct answer unless the question includes the DR statement, the command words "Determine" or "Show that", or some other indication that the method must be given explicitly.

A
Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. Accuracy marks cannot be given unless the associated Method mark is earned (or implied). Therefore M0 A1 cannot ever be awarded.

B
Mark for a correct result or statement independent of Method marks.

E
A given result is to be established or a result has to be explained. This usually requires more working or explanation than the establishment of an unknown result.

Unless otherwise indicated, marks once gained cannot subsequently be lost, e.g. wrong working following a correct form of answer is ignored. Sometimes this is reinforced in the mark scheme by the abbreviation isw. However, this would not apply to a case where a candidate passes through the correct answer as part of a wrong argument.

d. When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. (The notation 'dep*' is used to indicate that a particular mark is dependent on an earlier, asterisked, mark in the scheme.) Of course, in practice it may happen that when a candidate has once gone wrong in a part of a question, the work from there on is worthless so that no more marks can sensibly be given. On the other hand, when two or more steps are successfully run together by the candidate, the earlier marks are implied and full credit must be given.

e. The abbreviation FT implies that the A or B mark indicated is allowed for work correctly following on from previously incorrect results. Otherwise, A and B marks are given for correct work only – differences in notation are of course permitted. A (accuracy) marks are not given for answers obtained from incorrect working. When A or B marks are awarded for work at an intermediate stage of a solution, there may be various alternatives that are equally acceptable. In such cases, what is acceptable will be detailed in the mark scheme. If this is not the case please, escalate the question to your Team Leader who will decide on a course of action with the Principal Examiner.

Sometimes the answer to one part of a question is used in a later part of the same question. In this case, A marks will often be 'follow through'. In such cases you must ensure that you refer back to the answer of the previous part question even if this is not shown within the image zone. You may find it easier to mark follow through questions candidate-by-candidate rather than question-by-question.

f. We are usually quite flexible about the accuracy to which the final answer is expressed; over-specification is usually only penalised where the scheme explicitly says so.
   - When a value is given in the paper only accept an answer correct to at least as many significant figures as the given value.
   - When a value is not given in the paper accept any answer that agrees with the correct value to 3 s.f. unless a different level of accuracy has been asked for in the question, or the mark scheme specifies an acceptable range.
     NB for Specification B (MEI) the rubric is not specific about the level of accuracy required, so this statement reads "2 s.f".

   Follow through should be used so that only one mark in any question is lost for each distinct accuracy error.
   Candidates using a value of 9.80, 9.81 or 10 for g should usually be penalised for any final accuracy marks which do not agree to the value found with 9.8 which is given in the rubric.

g. Rules for replaced work and multiple attempts:
   - If one attempt is clearly indicated as the one to mark, or only one is left uncrossed out, then mark that attempt and ignore the others.
   - If more than one attempt is left not crossed out, then mark the last attempt unless it only repeats part of the first attempt or is substantially less complete.
   - if a candidate crosses out all of their attempts, the assessor should attempt to mark the crossed out answer(s) as above and award marks appropriately.

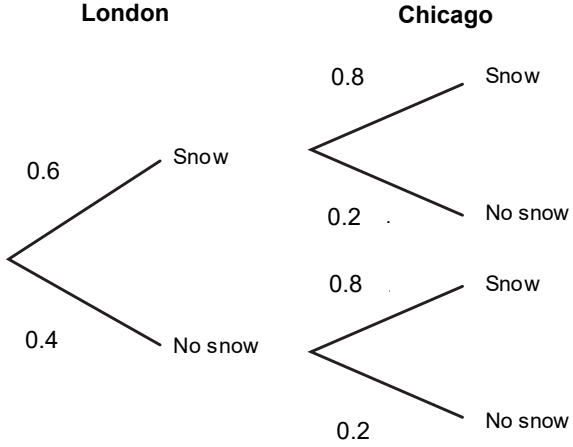
h. For a genuine misreading (of numbers or symbols) which is such that the object and the difficulty of the question remain unaltered, mark according to the scheme but following through from the candidate's data. A penalty is then applied; 1 mark is generally appropriate, though this may differ for some units. This is achieved by withholding one A or B mark in the question. Marks designated as cao may be awarded as long as there are no other errors.
   If a candidate corrects the misread in a later part, do not continue to follow through. Note that a miscopy of the candidate's own working is not a misread but an accuracy error.

i. If in any case the scheme operates with considerable unfairness consult your Team Leader.

Question			Answer	Marks	AO	Guidance
1	(a)		Use of 1.14	M1	AO1	**B3** for correct answer with no supporting working
			200 ÷ 1.14	M1	AO1	Implied by 175.438……
			£175.44	A1	AO1	Condone missing pound sign
				[3]		
1	(b)		Sensibly rounded exchange rate approximation	M1	AO3	e.g. £1 is about \$1.50 **or** \$1.75 accept \$2
			Sensible rounding of \$58.50	M1	AO3	Something rounded between \$55 and \$60 inclusive Or for finding multiples of their exchange rate approx., working towards \$58.50
			Answer in range £27.50 - £40 supported by correct working	A1	AO1	e.g. £1≈\$1.50 £4≈\$6 £40≈\$60 so about £40
				[3]		
2	(a)		(Modelling) path as a circle	E1	AO2	
				[1]		
2	(b)		$2 \times \pi \times 1.5 \times 10^{11}$ m	M1	AO2	No need to state units
			Dividing by 365 or 365.25	M1	AO2	
			Changing to km h^{-1}	M1	AO2	
			107588	A1	AO1	Allow Any level of accuracy
			108 000 [km h^{-1}]	A1	AO3	OR 110 000 km h^{-1} Decides to round to 2 or 3sf and rounds correctly
				[5]		

Question			Answer	Marks	AO	Guidance
3	(a)		3 and half hours with clients	M1	AO2	
			£25.55	A1	AO1	
				[2]		
3	(b)	(i)	1 hour 40 mins	B1	AO3	
				[1]		
3	(b)	(ii)	7 hours –(A) = 5 hours 20 mins	M1	AO2	FT **(i)** throughout **(ii)**
			£6.31 x working hours calculated	M1	AO1	
			£33.65	A1	AO3	Rounded to nearest penny
				[3]		
4	(a)		Sequence decreasing by 5	M1	AO3	Or for reading from the graph
			95, 90, 85, 80, 75, 70, 65, 60, 55	A1	AO3	
				[2]		
4	(b)		=3*B2 oe	B2	AO1	**SC1** for 3*B2
				[2]		
4	(c)		=B2*A2 - C2 or =(A2-3)*B2 oe	B2	AO1	**SC** for B2*A2 or (A2-3)
				[2]		If = missed on both **(b)** and **(c)**, only penalise once.
4	(d)		Costs (may be seen in table)	M1	AO2	285, 255, 240, 210, 195
			Profits calculated (may be seen in table)	M1	AO2	At least two correct values, allow FT
			Profits: 1235, 1275, 1280, 1260, 1235, 1200, 1155, 1100	A1	AO1	FT their costs Profits after second 1275 in table may be missed out
			[£] 19	A1	AO3	
				[4]		

Question			Answer	Marks	AO	Guidance
5	(a)	(i)	Single time or range between 3 and 4 seconds	B1 [1]	AO2	
5	(a)	(ii)	Gradient of *their* tangent (or chord)	M1	AO2	**OR** horizontal and vertical distances for gradient found Correct answer implies method mark
			Answer in range 25 to 45	A1	AO2	
			m/s or ms^{-1}	B1 [3]	AO1	Including correct units Allow metres per second in words
5	(b)		$\frac{50 \times 60 \times 60}{1000}$	M1	AO2	Method 2 **M1 A1** for changing 70 miles to km (112) **M1 A1** for changing to m/s (31.1) and concluding not the same
			180 [km/h]	A1	AO2	
			$\frac{180}{8} \times 5$	M1	AO3	
			112.5 [mph] so not the same	A1 [4]	AO3	Allow 110 to 115 with supporting working

Question			Answer	Marks	AO	Guidance
6	(a)	(i)		**A1** **A1** **A1** **[3]**	**AO3** **AO1** **AO2**	Sight of either 0.4 OR 0.2 anywhere on tree diagram Correct probabilities on first set of branches Correct probabilities on second set of branches
6	(a)	(ii)	1 – 0.4 × 0.2 92% oe	**M1** **A1** **[2]**	**AO2** **AO1**	Or for calculating all three other probabilities and adding **A1** for final answer
6	(b)	(i)	Mean = 50(mm)	**B1** **[1]**	**AO3**	Accept answers in range 45-52
6	(b)	(ii)	(number in range 120 to 140 minus *their* mean)/3 SD = answer in range 23 to 30	**M1** **A1** **[2]**	**AO3** **AO1**	**OR** statement that max value = mean + 3SD **FT**
6	(b)	(iii)	The data are skewed/ not symmetrical The Normal distribution would allow negative values	**E1** **E1** **[2]**	**AO3** **AO3**	Accept other appropriate answers

Question			Answer	Marks	AO	Guidance
7	(a)	(i)	4090 - 3040	B1	AO1	
			Divide by 15	B1	AO3	
				[2]		
7	(a)	(ii)	4090 / 3040 [= 1.345…]	M1	AO2	
			15^{th} root [=1.01997…]	M1	AO2	
			2%	A1	AO3	Allow unrounded Only allow 2% with supporting working
				[3]		
7	(a)	(iii)	4090 + 70 × 25 [= 4090 + 1750 = 5840]	M1	AO2	
			1.02^{25} [=1.640…]	M1	AO2	Allow FT
			4090 × 1.640… [= 6710]	M1	AO2	
			Comparison	E1	AO2	Appropriate comparison supported by *their* figures. e.g. The actual population was in between the two figures **OR** finding differences [250 million and 620 million] **OR** saying actual population is nearer to 5840 million
			Conclusion	E1	AO3	Appropriate conclusion supported by *their* figures e.g. 70 million a year is better
				[5]		
7	(b)		$\sqrt{10 \times 100}$	M1	AO3	Possibly in thousands or millions
			Use of (thousands) on vertical scale	M1	AO2	Implied by any answer between 10 million and 100 million
			Answer in range 25 million to 35 million	A1	AO1	**B3** for correct answer with no working
				[3]		

Question			Answer	Marks	AO	Guidance
8	(a)		One suggestion which improves clarity e.g. • squares to help read off, • lines at 5%, 15% etc as well as 10%, 20%	E1 [1]	AO3	
8	(b)		Finding percentages for men Adding percentages for men e.g. 5+20+24+11+10+10+20 They each gave one reason because percentages [for men] add up to 100	M1 M1 A1 [3]	AO2 AO2 AO3	Accept alternative answer which follows through from *their* working No marks if there is no justification given.
8	(c)	(i)	10 and 4 read off graph $\frac{4\times4+1\times10}{5}\approx5$ [%]	M1 A1 [2]	AO2 AO3	Printed answer so working must be seen **Alternative method** Out of 100 people working less than 30 hours, 80 are women and 20 men. About 3 women undergoing education and training and 2 men so 5 altogether
8	(c)	(ii)	$\frac{4\times36+1\times5}{5}$ 30[%]	M1 A1 [2]	AO2 AO2	Out of 100 people working less than 30 hours, 80 are women and 20 men. About 29 women and 1 man looking after….. Answer in range 29-31

Question			Answer	Marks	AO	Guidance
9	(a)		2 m = 2000 mm Length is divided by 400	 M1 [1]	 AO1	
	(b)		Weight is divided by 400^3 New weight is 0.00000125 kg = 0.00125 g 3 mg = 0.003 g Shrunken actor weighs less than ant	M1 M1FT M1 A1 [4]	AO2 AO2 AO2 AO3	 Making units comparable, can be implied by correct conclusion e.g. about half of ant weight

Sample Assessment Material

Level 3 Certificate Core Maths A/B (MEI)

H868(9)/01 Introduction to Quantitative Reasoning

Sample Insert

INSTRUCTIONS
- You can write on this Insert but it will **not** be sent for marking.

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Caring for the elderly

People who are elderly and/or disabled can pay to have a home care worker visit them at home. The home care worker can help with tasks such as getting up, washing, dressing and preparing food.

The person being cared for (or their family) pays for this care. The home care worker is usually employed by an agency which decides how much to charge for care. The charges are based on the number of hours of care needed. The home care worker might need to visit every day or just once or twice a week.

Some people being cared for every day will just need a morning visit and others will need a visit in the morning and another in the evening.

The home care worker is paid by the agency for the time they work. They must be paid at least the national minimum wage; these rates are updated every October. The table shows the hourly rates from October 2013.

Age	21 and over	18 to 20	Under 18	Apprentice
Hourly Rate	£6.31	£5.03	£3.72	£2.68

Working time includes the following:
- Being at work and required to work.
- Being on standby at work.
- Travelling connected to work, including travelling between jobs.
- Training at work.

The following are not included as part of working time:
- Travelling between home and work.
- Rest breaks.
- Holidays.
- Being on strike.

A government website gives the following examples.

Example 1
A care worker has 2 appointments in the morning and doesn't take any breaks. The worker must be paid the minimum wage for the time they spend at the appointments, plus the travel time.

Example 2
A care worker has 2 appointments in the morning. After the second appointment they go home to have a break before they go to their afternoon appointment. The time spent travelling between the second appointment and their home doesn't count towards the minimum wage.
If the care worker didn't go home but took a break on the way to their next appointment, they would be paid for any travel time but not for the break.

It is complicated to work out travel times for home care workers. Some agencies which employ home care workers just pay them for the time they spend with the clients being cared for. This is allowed, as long as the workers end up getting no less than they would if they were paid the minimum wage for all the time which counts as work, including travelling time between jobs. Some agencies do not pay care workers enough to cover the cost of travel time.

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Sample Assessment Material

For issue on or after: Date/Year

Level 3 Certificate Core Maths A (MEI)

H868(9)/01 Introduction to Quantitative Reasoning

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Summary of updates

Date	Version	Change
September 2025	3.0	Accessibility changes: Arial font Left alignment of text, tables and graphs Emboldening titles and key words Language modification of questions Scaffolding of questions into parts to ensure only a single demand being requested per question and to improve the awarding of follow through marks Replacement of answer boxes with answer lines Insertion of answer spaces after each question part, rather than grouped Detail of RM assessor added to mark scheme Mark scheme rubric updated